

~~METHOD FOR COMPENSATION FOR DUST FOR AN IMAGE SCANNER WITH A~~  
~~MOVING DOCUMENT~~ DETECTING A DEFECT IN AN IMAGE IN AN IMAGE  
SCANNER

FIELD OF INVENTION

This invention relates generally to devices for digital electronic scanning of images and more specifically to detection of dust and scratches and other surface defects.

BACKGROUND OF THE INVENTION

Electronic image scanners convert an optical image into an electronic form suitable for storage, transmission or printing. In a typical image scanner, light from an image is focused onto line-arrays of photosensors for scanning one line at a time. A two dimensional image is scanned by providing relative movement between the photosensor line-arrays and the original image. In general, a color scanner measures the intensity of at least three relatively narrow bands of wavelengths of visible light, for example, bands of red, green and blue.

For image scanners, the digitized image may be degraded by the presence of artifacts on the surface of the object being scanned, such as dust and fingerprints, or defects in the surface of the object being scanned, such as scratches, folds, or textured surfaces. Multiple methods have been disclosed for detecting defects on transparent media. See, for example, U.S. Patent Number 5,266,805, U.S. Patent Number 5,969,372, and EP 0 950 316 A1. Some of the methods in the referenced patent documents utilize the fact that the dyes in transparent color film are essentially transparent to infrared light, whereas dust and scratches are relatively opaque. Other disclosed methods utilize dark field imaging, in which the light reaching the photosensors is reflected or diffracted by defects instead of the film.

Scanners for opaque media are configured differently than scanners for transmissive media, and different detection methods are needed. Commonly